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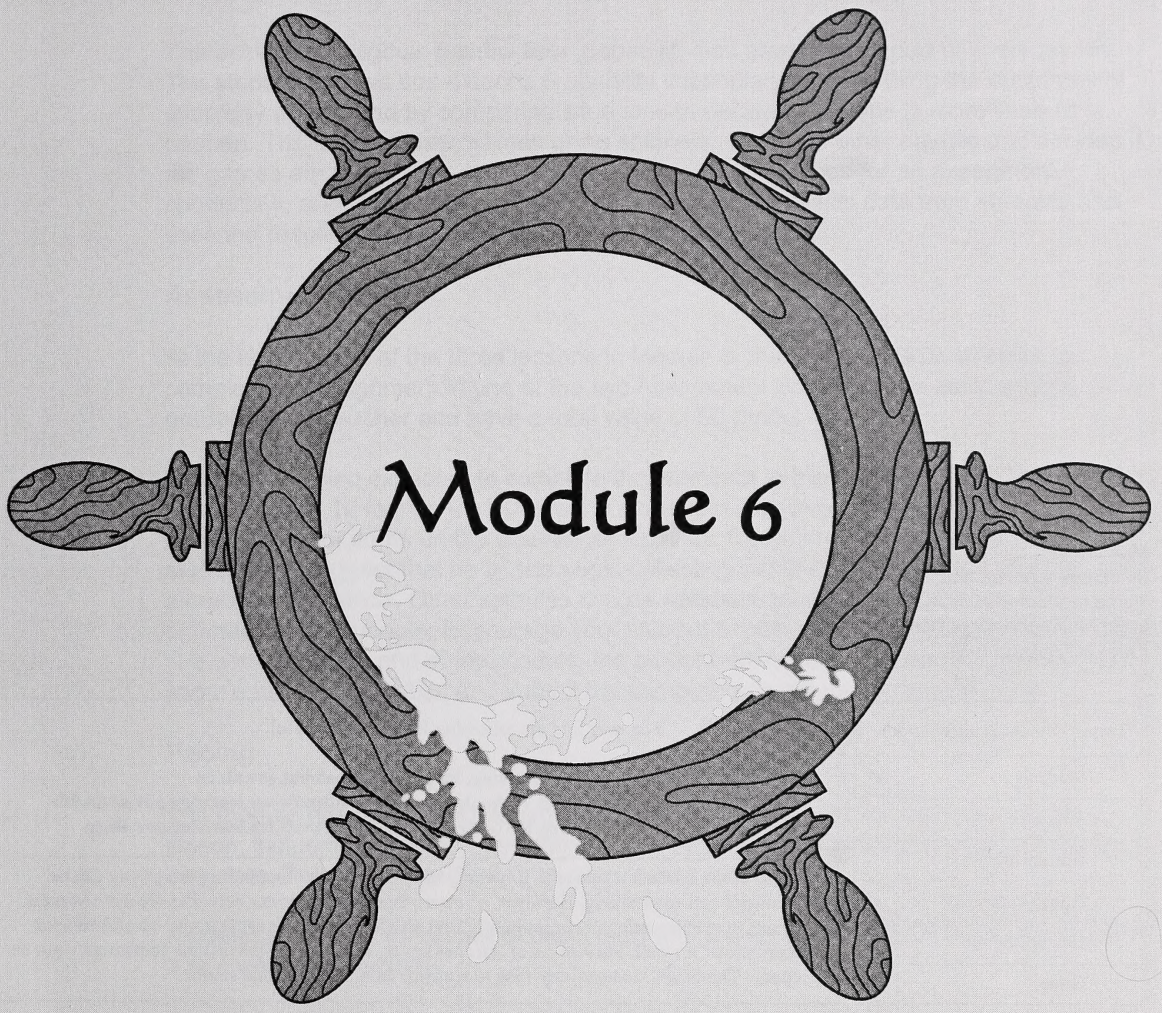
Mathematics 5



Home Instructor's Guide and Assignment Booklet 6A

Learning Technologies Branch

Alberta LEARNING

Mathematics 5
Module 6: Chance and Uncertainty
Home Instructor's Guide and Assignment Booklet 6A
Learning Technologies Branch
ISBN 0-7741-2055-X

This document is intended for	
Students	✓
Teachers	✓
Administrators	
Home Instructors	✓
General Public	
Other	

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Module 6: Chance and Uncertainty

Overview

The activities in Module 6 show how probability has always been part of everyday life. The student reviews and extends probability vocabulary by describing the outcomes of everyday events and by comparing situations to decide which one is more likely to happen. The student plays games using spinners, dice, and other objects and decides if the games are fair. The student lists all the possible outcomes for an experiment, conducts it, and then explains the results. The student collects data from samples and uses the results to make predictions about the populations.

Assessment

At the end of each of the three lessons in Module 6, the student will be directed to complete an assignment in one of the two Assignment Booklets. The assignments will be graded by the teacher and have a total value of 90 marks.

Students are also expected to complete the Numbers in the News project. This project has a value of 10 marks. Encourage the student to look through a newspaper at least once a week for items on the Scavenger Hunt list. Read through the list with your student and suggest that he or she begin collecting samples of the ideas that he or she already understands. Other samples can be collected as ideas are introduced or extended in the module. Encourage your student to collect as many samples as he or she wishes. At the end of the module, the student will need to choose at least one sample for each question and submit the samples with the Assignment Booklet.

Pacing

The module has been designed so that students can work at their own pace. Each lesson, including the lesson assignment, will take the average student about one week to complete. The Challenge Activity in each lesson is optional.

Allowing extra time for review of basic facts and project work, Module 6 will take students 3 to 4 weeks to complete.

Lesson 1: Describing the Chances

Overview

In this lesson the student will review and extend probability vocabulary for describing the chances of events happening. The student will decide what events are possible in everyday situations and describe the likelihood that they will happen. The student will compare situations to decide which one is more likely to happen, and explain why.

Special Requirements

There are no special materials needed for this lesson.

Sharing Time

Students are asked to discuss what they are learning at the end of Activity 2.

Activity 2 Sharing Time

Practice and Homework Book, page 80, questions 1 to 2

1. a. certain
   b. impossible
   c. probable or possible
   d. possible or improbable
   e. improbable

2. Answers will vary. A sample response is given.

   a. A bird flies to the moon.
   b. It is cold in winter in Inuvik.
   c. It will snow in Edmonton in February.
   d. There will be a astronaut on Titan before 2015.

Lesson 2: Investigating Chance

Overview

In this lesson the student will conduct experiments and play games. The student will list all the possible outcomes for an experiment, conduct the experiment, and then explain the results. The student will discuss fairness. The student will make spinners, predict the results when using them, and then use the spinners to check the predictions.

Special Requirements

You may gather the following materials for your student to use in this lesson:

- a regular six-sided die
- a paper clip
- a paper cup
- a jelly powder box
- a hexagonal pencil
- thumbtacks

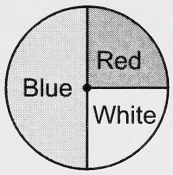
Sharing Time

Students are asked to discuss what they are learning at the end of Activity 3.

Activity 3 Sharing Time

Practice and Homework Book, page 82, question 1

This exercise is open-ended, so answers will vary. However, some sample responses are given.



Colour	Prediction	Tally
Red	15	𝍸 𝍸 |||
White	15	𝍸 𝍸 𝍸 |
Blue	30	𝍸 𝍸 𝍸 𝍸 𝍸 𝍸 |

The tallies are close to the predicted values. There were almost one-quarter red spins, one-quarter white spins, and one-half blue spins.

ASSIGNMENT BOOKLET 6A

Mathematics 5
Module 6: Lesson 1 Assignment and Lesson 2 Assignment

Home Instructor's and Student's Comments:

STUDENT FILE NUMBER
(if label is missing or incorrect)

_____

Date Submitted:

_____

Apply Module Label Here

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Please verify that preprinted label is for correct course and module.

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Assigned Teacher:

_____

Date Assignment Received:

_____

Grading:

_____

Teacher's Comments

_____
Teacher's Signature

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- Are all the assignments completed? If not, explain why.
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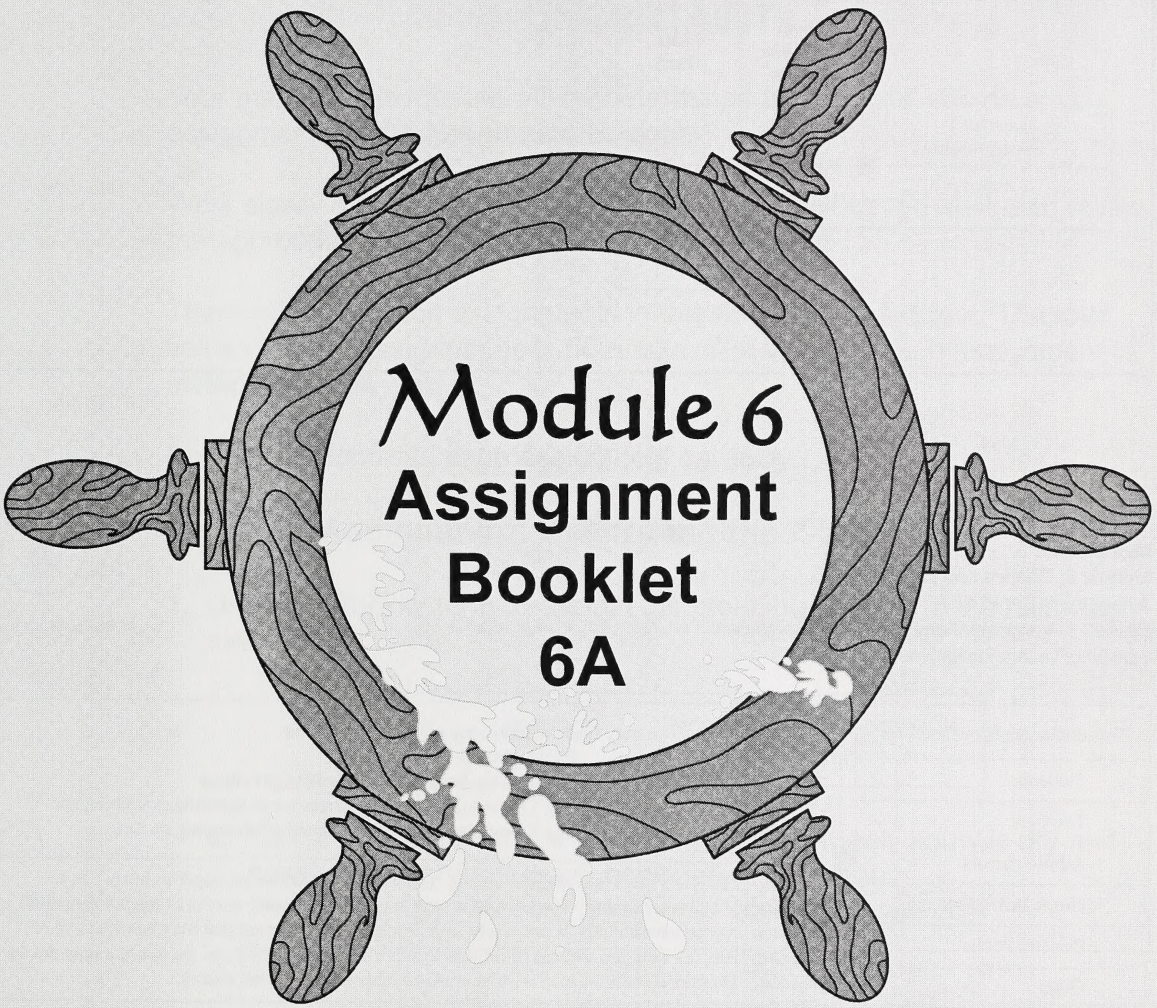

Chance and Uncertainty

Learning
Technologies
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LEARNING

FOR TEACHER'S USE ONLY

Summary

	Total Possible Marks	Your Mark
Lesson 1 Assignment	30	
Lesson 2 Assignment	30	
	60	

Teacher's Comments

Mathematics 5
Module 6: Chance and Uncertainty
Assignment Booklet 6A
Lesson 1 Assignment and Lesson 2 Assignment
Learning Technologies Branch

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ASSIGNMENT BOOKLET 6A
MATHEMATICS 5—MODULE 6: CHANCE AND UNCERTAINTY

Your mark on this module will be determined by how well you do your assignments in the Assignment Booklets.

Work slowly and carefully. If you are having difficulties, go back and review the appropriate lessons.

There are two lesson assignments in this Assignment Booklet. The total value of these assignments is 60 marks. The value of each assignment is stated in the left margin.

Be sure to proofread each assignment carefully.

(30)

Lesson 1 Assignment: Describing the Chances

1. Use a probability term to explain the meaning of each of the following sayings.

certain	probable	possible	improbable
impossible	likely	unlikely	

(2)

a. "Snow like meal, snow a great deal." **Note:** Mealy snow is dry and powdery like ground grain, especially corn meal.

(2)

b. "When the sun sets bright and clear, an easterly wind you need not fear."

(2) **c.** "When leaves show their back, rain we won't lack."

(2) **d.** "Moss dry, sunny sky, moss wet, rain we will get."

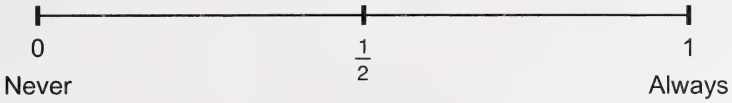
2. For each of the following games, use probability terms to explain in what way, if any, the results are influenced by age, experience, or skill.

(2) **a.** the card game called Go Fish

(2) **b.** the board game called Snakes and Ladders

(2) **c.** the board game called Checkers

(5) **3.** Mark and label points a, b, c, d, and e on the number line below to show how likely it is that each of the events would happen.



a. The farmer is heavier than the pumpkin he grew.

b. The mother is older than her child.

c. The kite is flying higher than the airplane.

d. A card drawn from a deck will be black.

e. You could jump up as high as an apartment building.

4. Use probability words to compare the events in each question. Explain.

(2) **a.** The North Saskatchewan River will be frozen in July.
The North Saskatchewan River will be frozen in December.

(2) **b.** A St. Bernard dog can pull an accident victim to safety.
A poodle can pull an accident victim to safety.

(2) **c.** You can outrun a healthy dog.
You can outrun a healthy cat.

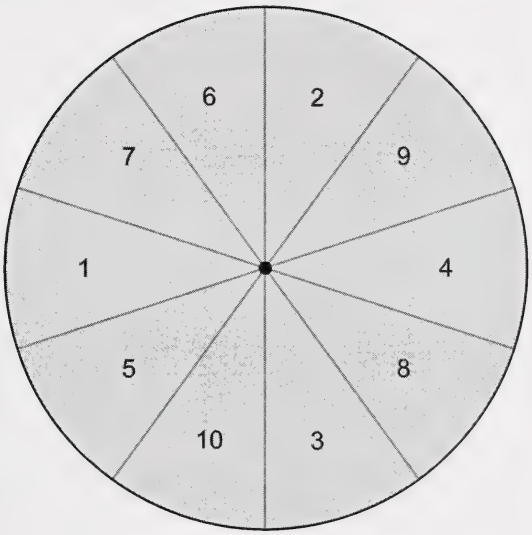
(2) **d.** The grocery store will be open at 2:00 **P.M.**
The grocery store will be open at 3:00 **P.M.**

(3) **5.** Describe something that is more likely to be done by adults than by children. Explain.

(30)

Lesson 2 Assignment: Investigating Chance

1. To win a game, Wui-Ching needs to spin a 6 or any of its factors on the spinner.



(2) **a.** Do you think Wui-Ching is more likely to win or lose the game? Explain.

_____

_____

_____

(3) **b.** Make 50 spins and record the results on the tally chart. Use a paper clip as a pointer like you did in Lesson 2.

Number Spun	Tallies	Frequency
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		
	Total	

(2) **c.** Compare your prediction with your results. Explain.

_____

_____

_____

_____

2. Alison also needs 6 or any of its factors to win her game, but she is using a regular die rather than a spinner like Wui-Ching's.

(2) **a.** Predict whether Alison is more likely to win her game than Wui-Ching. Explain.

(3) **b.** Make 50 tosses and record the results on the tally chart below.

Number Spun	Tallies	Frequency
1		
2		
3		
4		
5		
6		
	Total	

(2) **c.** Compare your prediction with your results. Explain.

3. Yvon tossed 20 tacks. Thirteen tacks landed on their points. He used the fraction $\frac{13}{20}$ to describe the probability of tossing "points."

Top Point

(2) **a.** Yvon says he can now predict 39 "points" if he tosses 60 tacks. Explain his reasoning.

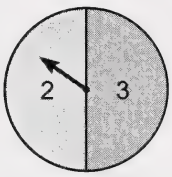
(2) **b.** Conduct an experiment to test Yvon's prediction. Toss 60 tacks and record your results in the table.

How Tacks Landed	Tallies	Frequency
Points		
Tops		
	Total	

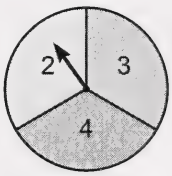
(2) **c.** Compare your results with Yvon's prediction.

(2) **d.** If you continue to conduct experiments with tacks, will you improve your ability to toss exactly the number you predict? Explain.

4. Make up a true statement about one or both of the spinners by using each of the probability terms given.



Spinner A



Spinner B

(2) **a.** never

(2) **b.** less likely

(2) **c.** more likely

(2) **d.** always

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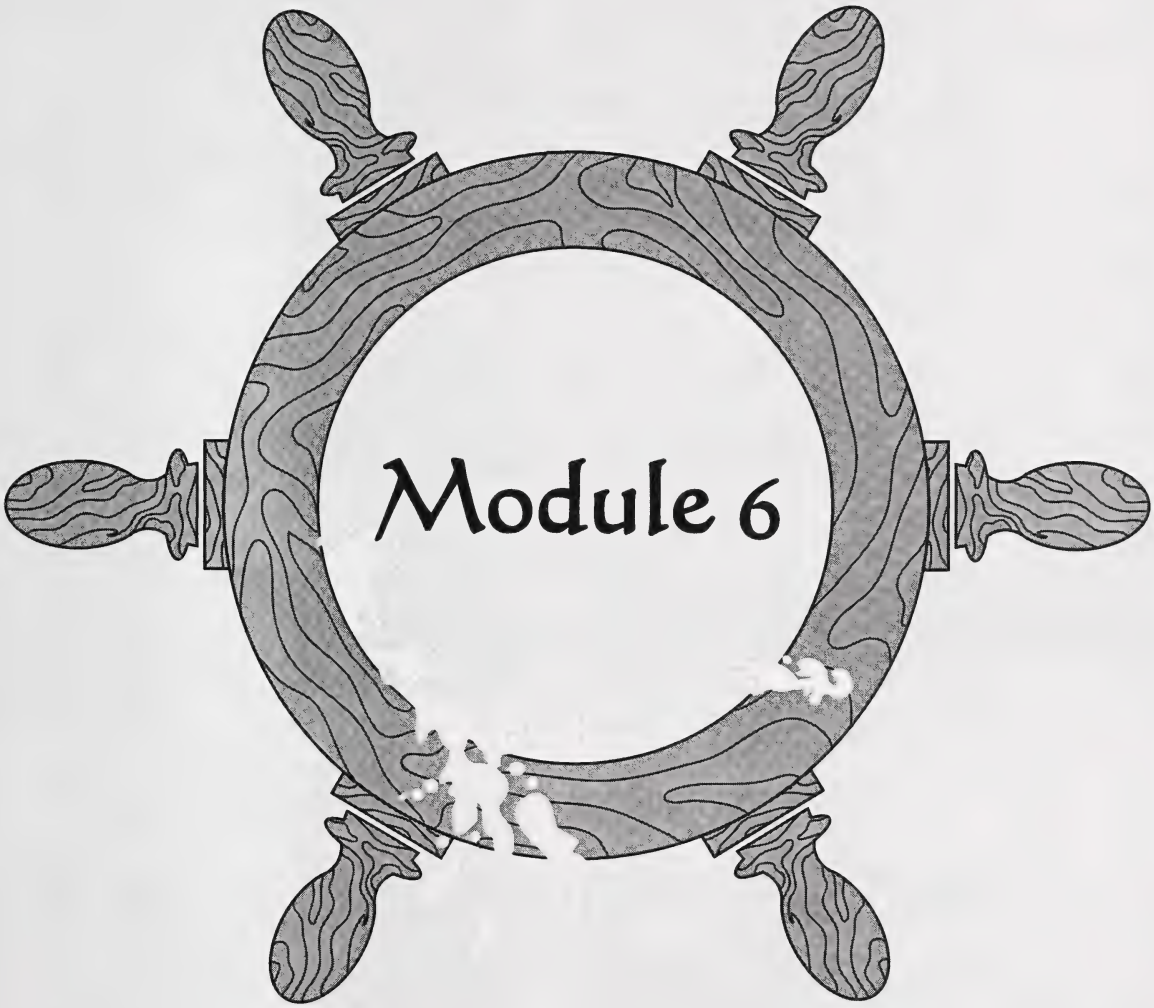
Mathematics 5



Home Instructor's Guide and Assignment Booklet 6B

Learning Technologies Branch

Alberta LEARNING

Mathematics 5
Module 6: Chance and Uncertainty
Home Instructor's Guide and Assignment Booklet 6B
Learning Technologies Branch
ISBN 0-7741-2056-8

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Teachers	✓
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Lesson 3: Chance—Past and Present

Overview

In this lesson the student will see how probability has always been part of everyday life. The student will play an ancient game of chance, collect data from samples, and use the results to make predictions about the populations from which the samples were taken.

Special Requirements

You may gather the following materials for your student to use in this lesson:

- a regular six-sided die
- 2 small game pieces
- a story book or a newspaper
- a 48-g package and a 159-g package of milk chocolate M&M's®
- a telephone book
- a paper clip
- games such as Snakes and Ladders, Go Fish, and Checkers

Sharing Time

Students are asked to discuss what they are learning at the end of Activity 2.

This sharing time exercise is open-ended so answers will vary. However, some sample answers are given.

Activity 2 Sharing Time

The outcome of Snakes and Ladders depends on chance alone. The outcome of Go Fish depends on chance and skill. Checkers is a game of skill.

Module Summary

In the Module Summary students are asked to complete the Numbers in the News Project and send the completed project with Assignment Booklet 6B to the teacher.

Following the Module Summary are Keystrokes and Review. These special activities can be assigned at a later time to review the module ideas and prepare for the final test.

ASSIGNMENT BOOKLET 6B

Mathematics 5
Module 6: Lesson 3 Assignment and Numbers in the News

Home Instructor's and Student's Comments:

STUDENT FILE NUMBER
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Date Submitted:

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Assigned Teacher:

Date Assignment Received:

Grading:

Teacher's Comments

Teacher's Signature

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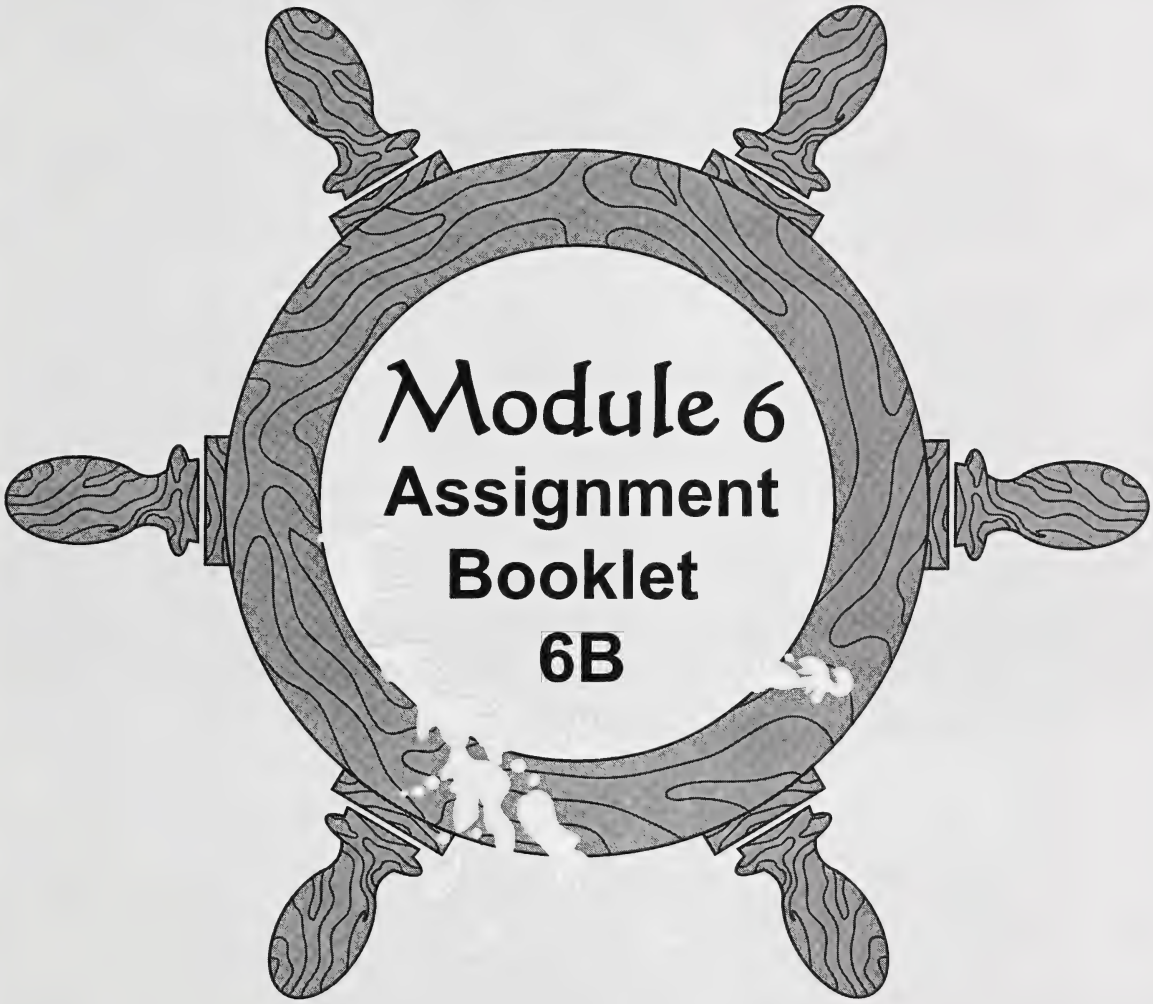

Module 6
Assignment Booklet 6B

Chance and Uncertainty

Learning Technologies Branch

Alberta LEARNING

FOR TEACHER'S USE ONLY

Summary

	Total Possible Marks	Your Mark
Section 3 Assignment	30	
Numbers in the News	10	
	40	

Teacher's Comments

Mathematics 5
Module 6: Chance and Uncertainty
Assignment Booklet 6B
Lesson 3 Assignment and Numbers in the News
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ASSIGNMENT BOOKLET 6B
MATHEMATICS 5—MODULE 6: CHANCE AND UNCERTAINTY

Your mark on this module will be determined by how well you do your assignments in the Assignment Booklets.

Work slowly and carefully. If you are having difficulties, go back and review the appropriate lessons.

There is one lesson assignment and a Numbers in the News project in this Assignment Booklet. The total of the lesson assignment is 30 marks. The Numbers in the News project is worth 10 marks. The value of each assignment is stated in the left margin.

Be sure to proofread each assignment carefully.

(30)

Lesson 3 Assignment: Chance—Past and Present

1. Heidi said that in any particular area of Alberta, the first three digits in telephone numbers repeat often because they represent the exchanges used in that area. She predicted that the numbers used for the last four digits would likely all have about the same frequency.

(2) **a.** Do you agree with Heidi? Explain.

_____

_____

_____

(2) **b.** Open a phone book to any page without looking. Do you think this is a good sample to test your prediction? Explain.

_____

_____

_____

(4) **c.** Tally each of the last four digits of all the phone numbers on the page.

Digit	Tallies	Frequency
0		
1		
2		
3		
4		
5		
6		
7		
8		
9		
	Total	

(2) **d.** Compare your results with your prediction. Explain.

_____

_____

_____

2. Five-twelfths of the pizzas sold at Paolo's Parlour are vegetarian (have no meat), one-third have pepperoni, and one-fourth have meat other than pepperoni.

(3) **a.** For each dozen pizzas ordered, how many of each type would they expect to sell? Explain.

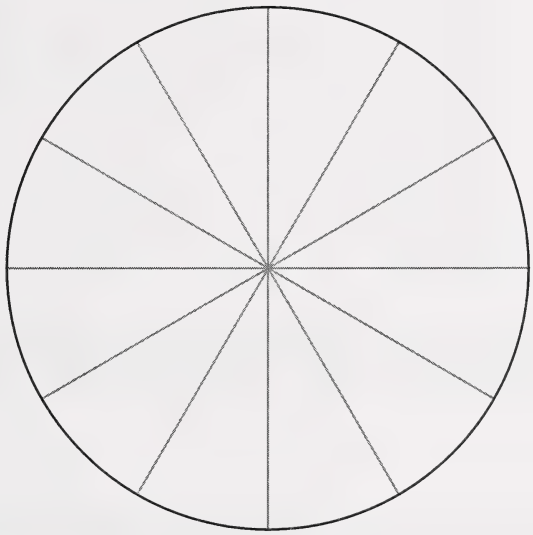
_____

_____

_____

_____

(3) **b.** Complete the spinner below by labeling the correct number of parts for each of the three types of pizza described above.



(2) **c.** Predict how many of the next 24 pizzas ordered will be out of each type. Explain.

_____

_____

_____

(4) **d.** Use a paper clip as a pointer and make 24 spins (each spin stands for a pizza sold). Record your data in the table below.

Type of Pizza	Tallies	Frequency
Pepperoni		
Other Meat		
Vegetarian		
	Total	

(2) **e.** Compare your prediction in question 2.c. with your results.

3. Jason wondered how many of each letter there was in the brand of alphabet soup he was about to eat. He counted the letters in each spoonful before he ate it. His results are shown below.

A	B	C	D	E	F	G
𝍸 |	|	||	||	𝍸 |||	||	|||

H	I	J	K	L	M	N
|||	𝍸		||	||||	|||	𝍸

O	P	Q	R	S	T	U
𝍸	||	||	||||	𝍸	𝍸	||||

V	W	X	Y	Z
|||	||	|||	|	|||

Explain why you agree or disagree with each of Jason's conclusions.

(2) **a.** The company likely makes about twice as many consonants as vowels for the soup.

(2) **b.** The company doesn't make the letter J for the soup.

(2) **c.** I am certain that the company makes more of the letter E for the soup than any other letter.

(10) **Numbers in the News**

Go through the scavenger hunt list for Module 6 to make sure you have clipped at least one sample for each question. Ask your home instructor to check the sample you wish to use, and label each one with the scavenger hunt number it matches. Organize your samples and put them together with any other information required. Submit your project with this Assignment Booklet.

Ask yourself the following questions:

- Is my Numbers in the News project complete? (Have I included all my samples?)
- Do my samples show the ideas clearly? (Are my examples appropriate?)
- Did I take care to be neat when organizing and labelling my work?

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